New England, while the course of the area through Canada is uncertain. On the morning of the 28th it was central in northern Vermont; Montreal barometer 0.32 below normal, at which time brisk SW. winds prevailed on Middle Atlantic coast, with generally clear weather, except rain on North Carolina coast. During the day heavy rains fell in the Middle Atlantic States, and a violent local storm was reported from Baltimore, where it did much damage. Cautionary Signals ordered at noon were lowered during the afternoon on the Carolina and Jersey coast. Though hoisted somewhat late for the Carolina coast, they were justified by winds ranging from 28 to 40 miles. The depression moved NE., becoming deeper, and on the morning of the 29th disappeared into the Gulf of St. Lawrence, the barometer at Sydney being 0.42 below the normal, while the abnormal line of —0.30, extending itself south to include the Jersey coast, brisk SW. winds continued on the Carolina coast. Cautionary Signals were hoisted on the morning of the 29th on the Carolina and Off-shore on the Jersey coast and lowered at midnight. The signals were justified by winds ranging from 29 to 36 miles.

No. IX.—This area appeared on the Middle Pacific coast on the morning of the 28th and following a course generally NE. crossed the northern parts of California, Nevada, Utah and Wyoming, reaching central Dakota the morning of the 30th. Thence its course was nearly north and at midnight of the 30th it was central in northwest Dakota, the barometer at Bismarck being at that time 0.36 below the normal. Its progress was marked by gentle winds without precipitation on the 28th. On the 29th light rains prevailed in northern Montana followed on the 30th by heavy rains in the Northwest and Upper Missouri valley with brisk to high southerly winds in the Upper Missouri and Mississippi valleys. Generally clear weather prevailed during the 30th on the Upper Lakes with brisk S. to E. winds not sufficient to require signals.

INTERNATIONAL METEOROLOGY.

Three charts of International Meteorology are issued with this *Review*; No. IV, and two for *November*, 1877, which are not numbered. On the first are laid down the tracks of centres of low barometers and drawn the lines of equal precipitation. On the second are charted the lines of mean pressure and temperature and the force and prevailing direction of the wind at 7:35 a. m., Washington mean time, for that month. The two charts are based on the daily charts of the International Bulletin.

On chart No. IV are shown the probable tracks of storm-centres over the oceans, deduced from data received at this office up to July 3rd, and in the upper right-hand corner will be found an index to the same. The following is a brief notice of the same, and also of some storms over the Southern Hemisphere:

North Atlantic Ocean.—No. I probably developed on *April* 23rd about 55° N., 40° W.; it was attended by westerly gales and high seas from the 24th to the 26th, between 35° and 15° W. and 45° and 55° N., and on latter day moved southeastward off the Irish coast towards France. No. II probably developed over the Bay of Biscay on *May* 1st, after which it moved eastward over the Mediterranean. No. III appeared on the coast of Portugal on *May* 7th. No. IV appeared to the northwestward of Ireland on *May* 16th and afterward moved southeastward over Europe. No. V is a continuation of low pressure area No. X described in the *May Review*. No. VI developed on *May* 21st and 22d in the southern extremity of low pressure area No. VIII described in *May Review;* on the 23rd it moved northeastward between the Atlantic coast and the Bermudas, attended by heavy rains over latter, and possibly joined the preceding area on the 26th in the neighborhood of Newfoundland. No. VII advanced toward the British Isles from the northwest on *May* 24th and moved as shown on chart. From the 27th of *April* to the end of *May* high pressures prevailed over the North Atlantic between latitudes 40 and 55, with almost an entire absence of high winds, excepting occasional gales attending the storms already noticed. *South Atlantic Ocean.*—Ship Ferris S. Thompson, from San Francisco, 114 days to New York, June 15th, reported *April* 17th, 1879, passed Cape Horn; 18th, 3 a. m., heavy SE. gale; first officer washed overboard and drowned; bulwarks badly stove. Bark Lepanto (from Melbourne to New York) passed Cape Horn *April* 25th, 1879, and on the 27th had a strong gale from SSE. to SSW., with blinding snow-storm, lasting 20 hours. *North Pacific Ocean.*—Five tracks are given on the chart, which probably indicate, somewhat correctly, the movement of the principal areas of low pressure, over the region covered, from *March* 28th to *April* 21st, 1879. *Indian Ocean.*—"*February* 12th, 1879, 41° 23′ S., 64° 48′ E., N. strong, heavy cross sea; 13th, 39° 46′ S., 63° 53′ E., W. strong, squally, heavy sea, shipped much water; 21st, 33° 08′ S., 45° 32′ E., SE. to ENE., heavy gales, cross sea and rain; 22nd, 31° 32′ S., 45° 16′ E., SE. to calm to NNW., heavy gales, heavy sea. A special account published in "*La Nature*" of the cyclone of *March* 19th, noticed in the *May Review*, will be found under "Notes and Extracts."

TEMPERATURE OF THE AIR.

The isothermal lines on chart No. II show the general distribution of the temperature of the air for the month. By a reference to the table of average temperatures upon the same chart it will be seen that the temperature of the present month has been very generally about normal or below the average, except in Missouri valley, Middle and southeast Rocky Mountain Slope, where it has been from 15° to 27° above. On the immediate North Pacific coast, and in the St. Lawrence valley, it has been from 3° to 3.5° below. The Salt Lake temperature is erroneously reported as *above* on chart No. II. It should read *below*. The following comments on the temperature for the month have been received from special observers: Gardiner, Me.,

extremely cold and very wet month, 3° below mean of 43 years; rain-fall in excess, 3.76 inches. Contoocookville, N. H., temperature 2° below average for 10 years; excess of rain about 2.25 inches. Westborough, Mass., "a cold, frosty month." Palermo, N. Y., coldest June since 1859. Riley, Ill., present month 1°.9 below month for 18 Junes past. Coalville, Utah, month 1°.5 colder than average June for 15 years; June 24th was 3° lower than any day in June during that period.

Minimum and Maximum Temperatures are, respectively, as follows:—*Maine*—at Portland, 44°, 93°; Orono, 34°, 87°. *New Hampshire*—Dumbarton, 40°, 92; Auburn, 32°, 92°; Mt. Washington, 15°, 70°. *Vermont* West Charlotte, 43°, 93°; Lunenburg, 34°, 87°; Woodstock, 32°, 92°. *Massachusetts*—Newburyport, 42°, 97°; Boston, 45°, 96°; Waltham, 40°, 91°. *Rhode Island*—Newport, 49°, 79°. *Connecticut*—New Haven, 46°, 90°; Southington, 44°, 87°. *New York*—Willet's Point, 46°, 97°; New York City, 47°, 89°; Plattsburg Barracks, 33°, 84°; Rochester, 36°, 91°; West Point, 45°, 1[illegible]°. *Pennsylvania*—Milton, 47°, 98°; Franklin, 28°, 88°; Philadelphia, 49°, 93°; Pittsburgh, 39°, 94°; Erie, 42°, 88°. *New Jersey*—Atco, 50°, 98°; Vineland, 44°, 94°; Priceton, 42°,—. *Maryland*—Woodstock, 45°, 94°; Baltimore, 52°, 94°. *Virginia*—Wytheville, 45°, 86°; Dover Mines, 55°, 98°; Norfolk, 55°, 96°. *West Virginia*—Morgantown, 39°, 88°. *North Carolina*—Summit of Roan Mountain, (Elevation 6,367 feet) 42°, 68°; Highlands, 44°, 88°; Weldon, 62°, 98°; Greensboro, 60°, 88°. *South Carolina*—Charleston, 60°, 92°. *Georgia*—McPherson Barracks, 50°, 96°; Savannah, 61°, 96°; Atlanta, 54°, 92°. *Florida*—Middleton, 56°, 94°; Ft. Barrancas, 60°, 102°; Jacksonville, 62°, 96°. *Alabama*—Green Springs, 54°, 88°; Montgomery, 58°, 98°; Mobile, 6[illegible]°, 96°. *Mississippi*—Vicksburg, 53°, 96°; Fayette, 5[illegible]°, 90°. *Louisiana*—Shreveport, 56°, 96°; New Orleans, 61°, 91°. *Texas*—Corsicana, 51°, 99°; Mason, 46°, 99°; Galveston, 64°, 94°; Laredo, 56°, 108°; Uvalde, 51°, 104°; Rio Grand City, 100° to 103°, from 12th to 16th, Graham, 44°, 105°; Edinburg, 105°, 14th; El Paso, 57°, 104°. *Ohio*—Westerville, 39°, 93°; Ruggles, 42°, 100°; Cincinnati, 53°, 90°; Toledo, 43°, 91°. *Indiana*—Spiceland, 43°, 90°; Vevay, 58°, 93°; Indianapolis, 47°, 91°. *Illinois*—Riley, 39°, 87°; Stirling, 49°, 94°; Chicago, 43°, 87°; Cairo, 53°, 91°. *Kentucky*—Louisville, 53°, 94°. *Tennessee*—Knoxville, 48°, 92; Memphis, 54°, 97°. *Arkansas*—Mt. Ida, 42°, 96°. *Missouri*—Pierce City, 38°, 98°; St. Louis, 50°, 95°; Kansas City, 45°, 96°. *Iowa*—Nora Springs, 40°, 92°; Logan, 44°, 92°; Des Moines, 45°, 90°; Keokuk, 47°, 89°. *Nebraska*—Ft. Sidney, 29°, 99°; Genoa, 47°, 99°; Omaha, 45°, 93°; Ft. McPherson, 36°, 99°. *Kansas*—Wellington, 45°, 98; Ft. Wallace, 52°, 108°; Leavenworth, 46°, 93°. *Indian Territory*—Ft. Sill, 47°, 98°; Ft. Gibson, 47°, 100°. *Michigan*—Marquette, 32, 95°; Port Huron, 39°, 90°; Lansing, 45°, 92°. *Minnesota*—Duluth, 39°, 85°; St. Paul, 44°, 91°; Breckenridge, 39°, 92°. *Wisconsin*—Neillsville, 35°, 91°; Milwaukee, 40°,85°; La Crosse, 43°, 88°. *Washington Territory*—Olympia, 38°, 76°. *Oregon*—Roseburg, 41°, 84°; Umatilla, 46°, 91°. *California*—Visalia, 46°, 109°; San Diego, 52°, 93°; Red Bluff, 55°, 104°; Los Angeles, 50°, 103°. *Nevada*—Winnemucca, 31°, 94°; Pioche 37°, 91°. *Colorado*—Pikes Peak, 12°, 52°; Denver, 43°, 95°; Hermosa, 42°, 92°. *Utah*—Coalville, 28°, 90°; St. George, —, 101°; Salt Lake City, 42°, 94°; Ft. Douglass, 40°, 93°. *New Mexico*—**Ft. Union, 32°, 88°**; Santa Fe, 38, 91°; Albuquerque, 80°, 102; La Messilla.—, 103°. *Arizona*—Camp **Apache, 42°, 93°**; Yuma, 59°, 101°; Wickenburg, 50°,103°; Camp McDowell, 45°, 110°; Florence, 56°, **110°.** *Idaho*—Boise City, 41°, 93°. *Wyoming*—Cheyenne, 32°, 92°. *Dakota*—Pembina, 31°, 93; Bismarck, **36°, 91°**; Yankton, 38°, 92°. *Montana*—Virginia City, 35°, 82°.

***Ranges** of Temperature.*—The *monthly ranges* will appear from an examination of the minima and maxima just given. The greatest *daily ranges* vary in New England from 17° at Wood's Holl to 36° at Boston; Middle Atlantic States, 18° at Cape May to 30° at Norfolk and Baltimore; South Atlantic States, 14° at Cape Lookout to 28° at Wilmington and Augusta; Eastern Gulf States, 19° at Key West to 29° at Montgomery; Western Gulf States, 16° at New Orleans and Galveston to 40 at Corsicana; Ohio valley and Tennessee, 24° at Cairo to 35° at Pittsburgh; Lower Lake region, 24° at Buffalo and Erie to 38° at Rochester; Upper Lake region, 26° at Chicago and Grand Haven to 44° at Marquette; Upper Mississippi valley, 25° at La Crosse to 38° at Keokuk; Missouri valley, 32° at Leavenworth to 42° at Yankton; Red River of the North valley, 35° at Breckenridge to 46° at Pembina; Eastern Rocky Mountain Slope, 33° at San Antonio to 45° at Uvalde and 43° at North Platte; Rocky Mountain stations, 22° at Pike's Peak to 39° at Denver and 44° at Cheyenne; Western Plateau, 32° at Pioche and 37° at Boise City to 43° at Winnemucca; California, 23° at San Francisco to 47° at Visalia; Oregon, 28° at Portland to 41° at Umatilla; Arizona, 43° at Yuma 47° at Tucson; Washington Territory, 32° at Olympia.

Frosts, injurious to vegetation, are reported as follows: Milwaukee, Wis., 7th, very destructive, vegetables and flowering plants extensively injured; Grand Haven, Mich., 7th, much damage to crops and small fruit; Oswego, N. Y., 7th, much damage reported throughout interior of State; Strafford, W., 7th, 8th, killed corn, potatoes and grapes; Logansport, Md., 7th, severe, injuring vegetation in southern part of country; Burlington, Vt., 13th, much damage done to crops in northern Vermont—in some places fruit ruined; Mt. Desert, Me., 9th, heavy, killing vegetation; New Bedford, Mass., 16th, lima beans touched; Westborough, Mass., 19th, enough to touch beans; Thornville, Mich., 7th, killing some corn and potatoes; Wautoma, Wis., 17th, heavy, killing corn, beans and potatoes, and doing some damage to all kinds of vines; 9th, Coalville, Utah, severe, every bush, bean and potato top cut down; 24th, potato tops all frozen black; everything looks desolate for crops.

Ground Frozen.—Burlington, Vt., 13th, to a depth of 1 inch.

Ice—formed at Nile, N. Y., on the 7th, one inch thick; at Neillsville, Wis., on the 2nd, ½ inch thick.